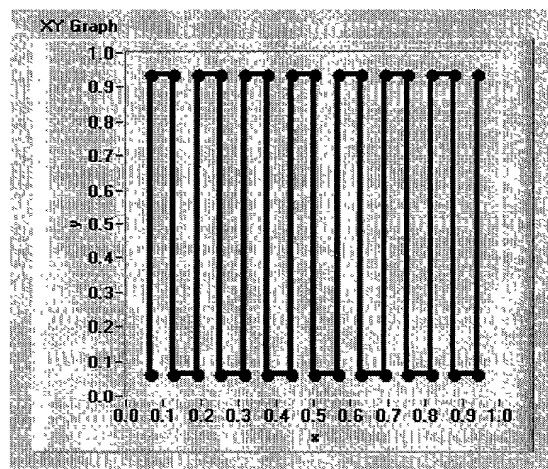


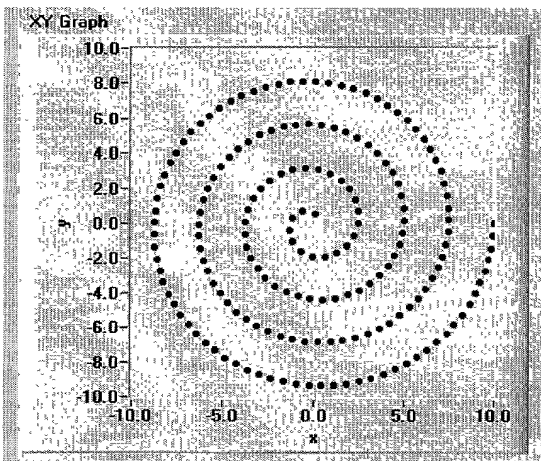
Approximated Peano Curve. The space-filling process has not been completed.

Figure 1A (Prior Art)



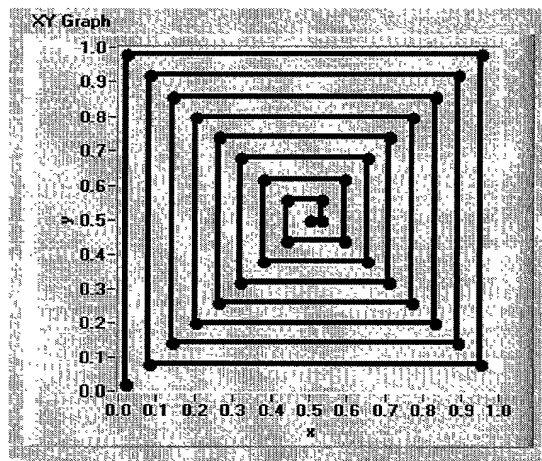
Boustrophedon Path

Figure 1B (Prior Art)



Archimedes Spiral defined by equally distributed points

Figure 1C (Prior Art)



Spiral-like line-based scanning

Figure 1D (Prior Art)

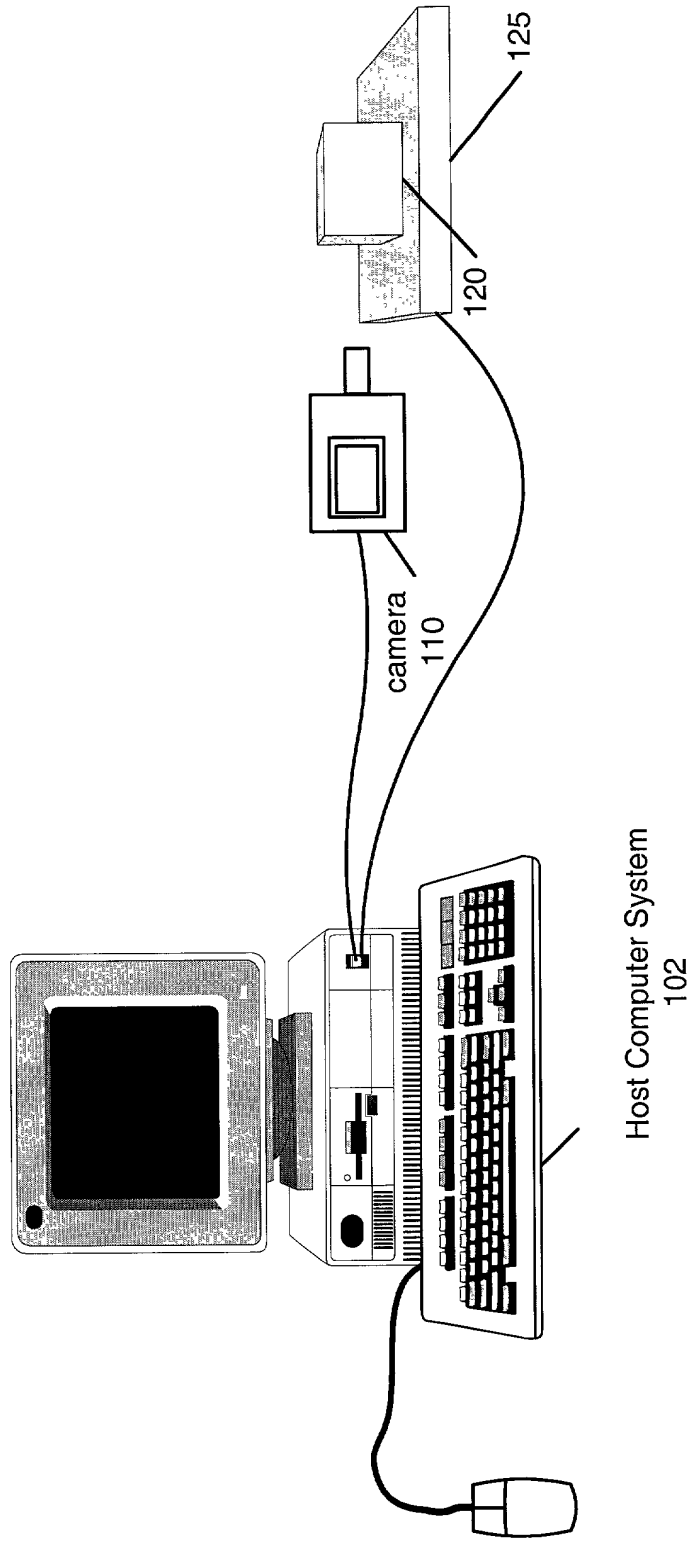


Figure 2A

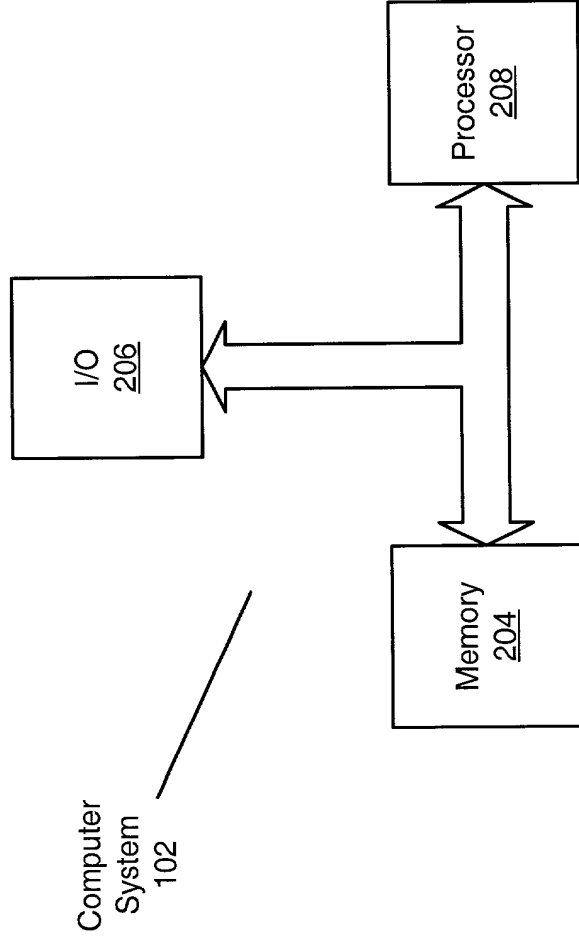


Figure 2B

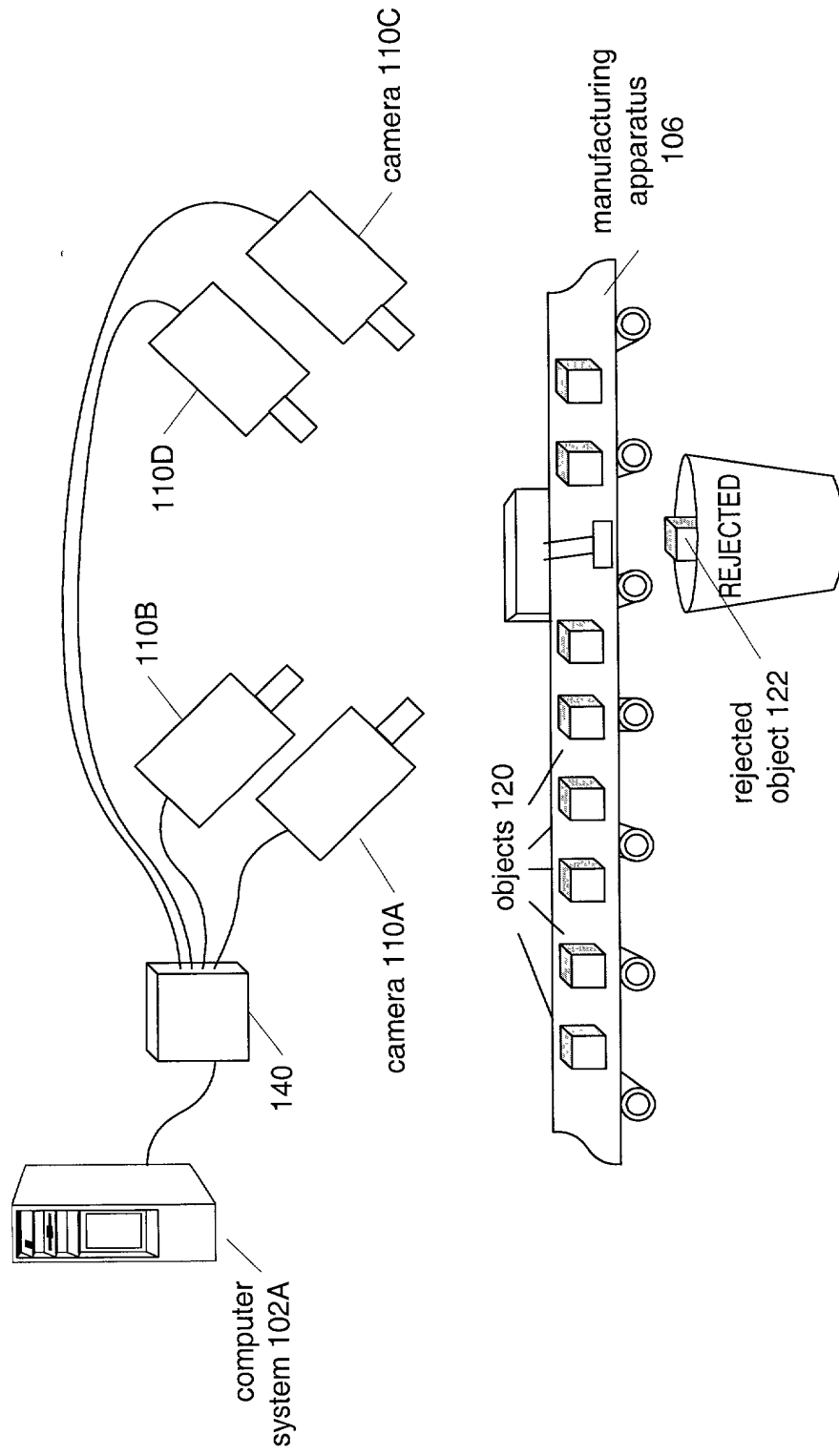


Figure 3A

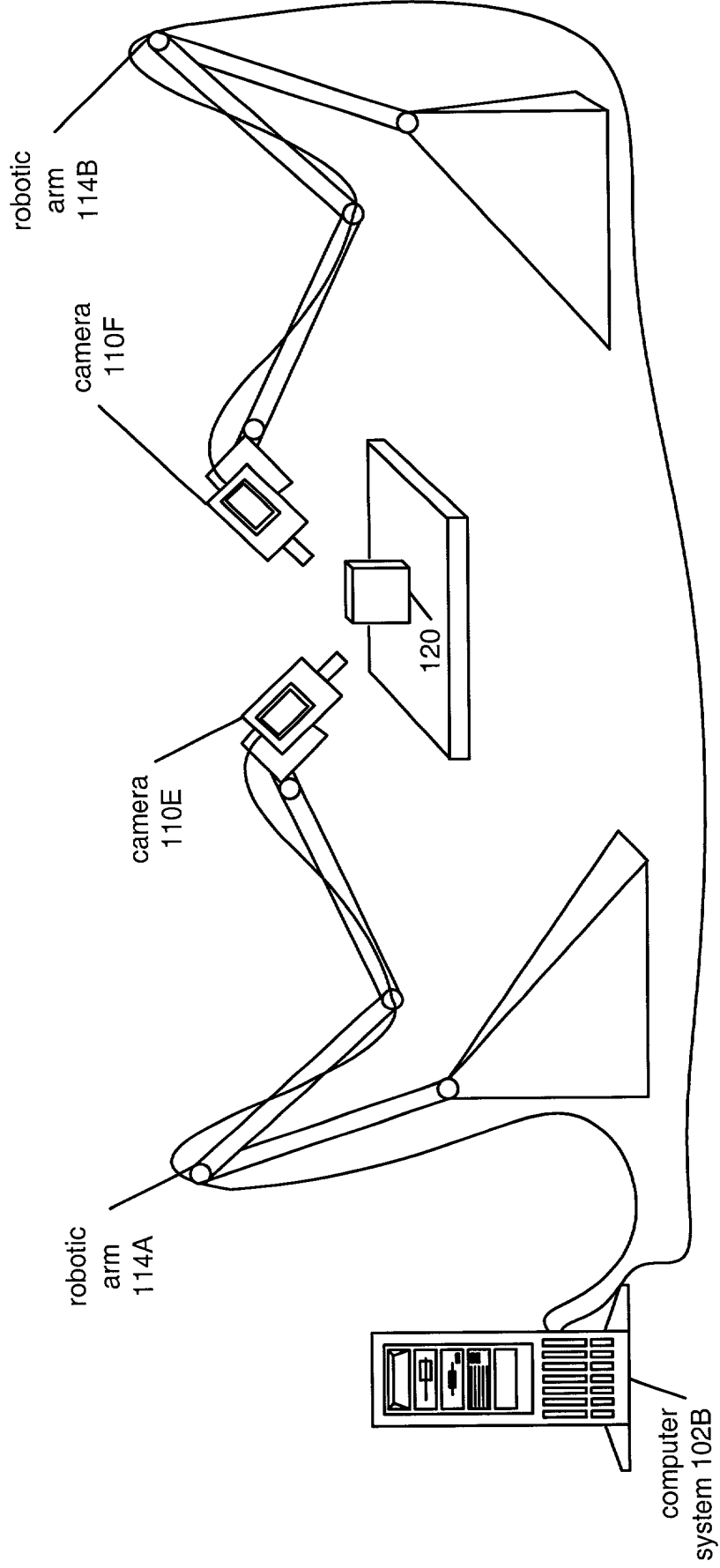


Figure 3B

Computer System 102C

Phased Array 306

Array Elements 304

Figure 3C

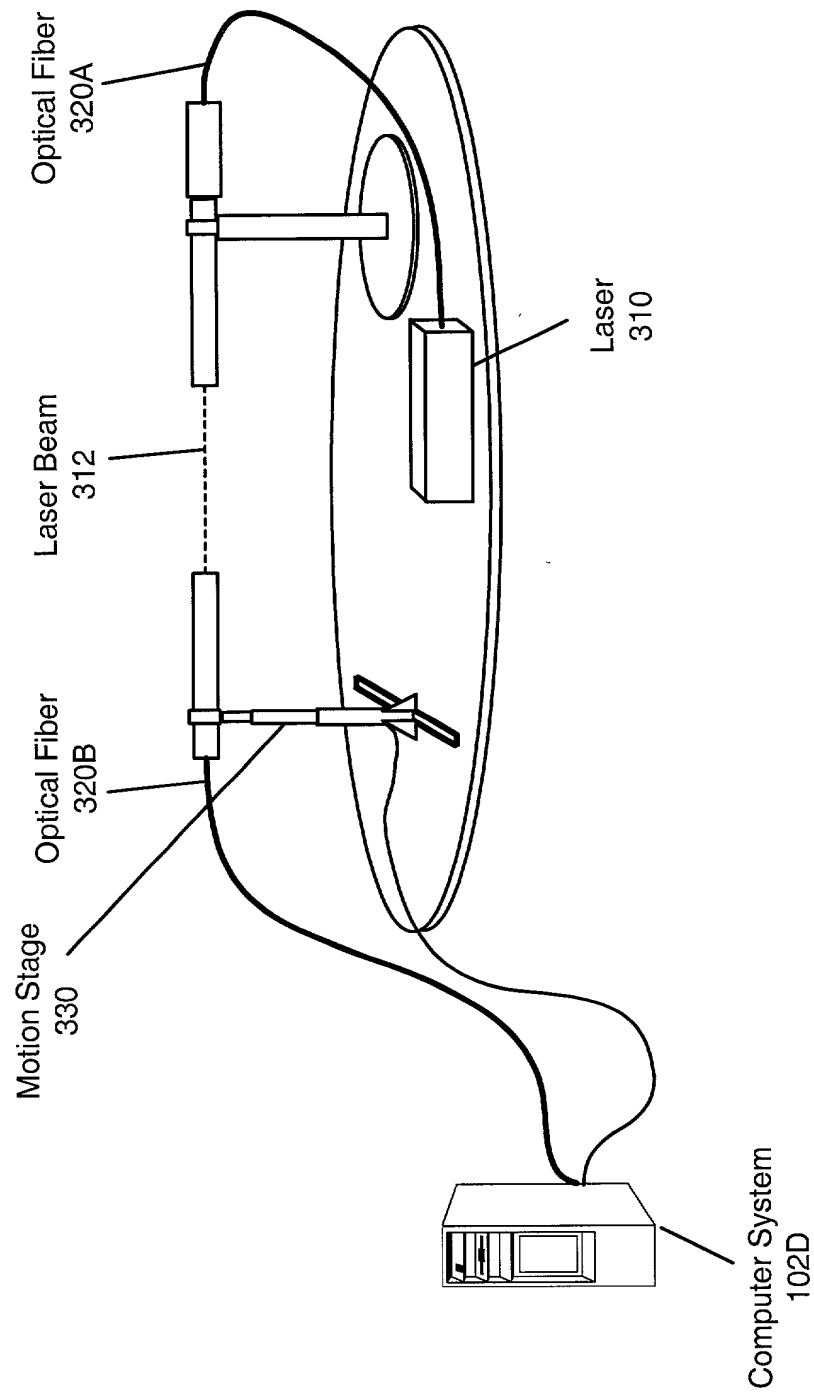
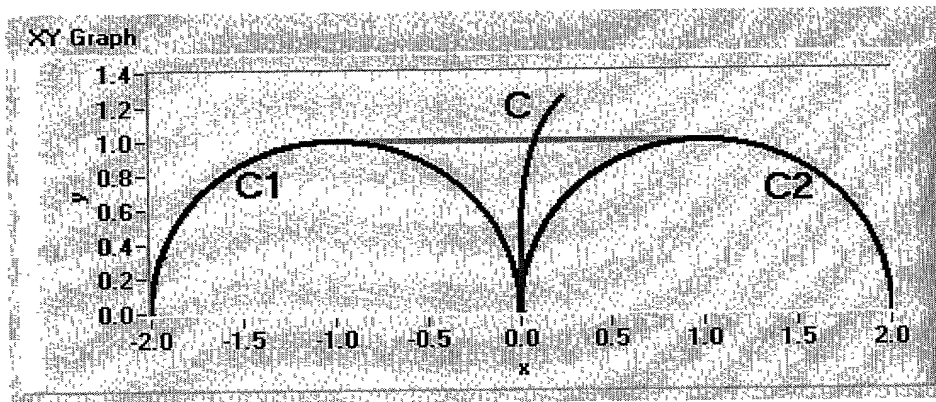
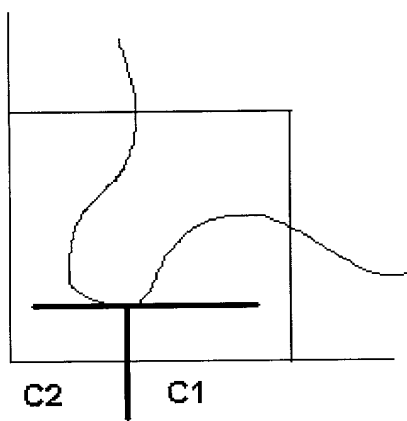


Figure 3D



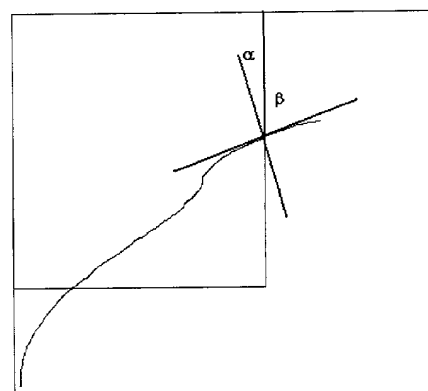
The situation of Lemma 1

Figure 4A



Case (A)

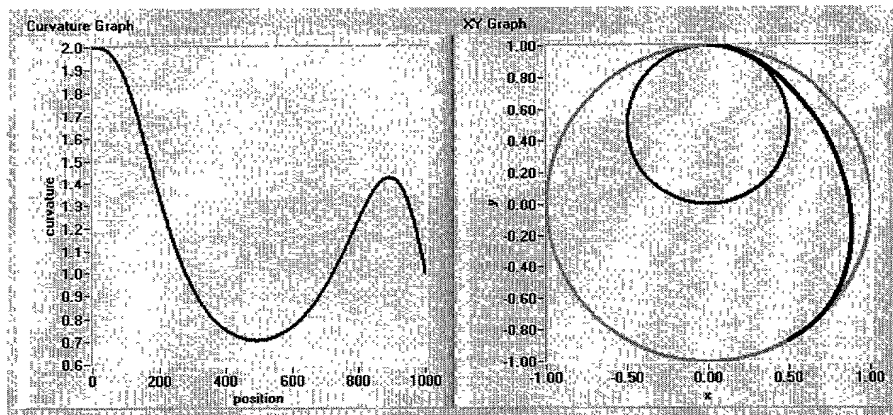
Figure 4B



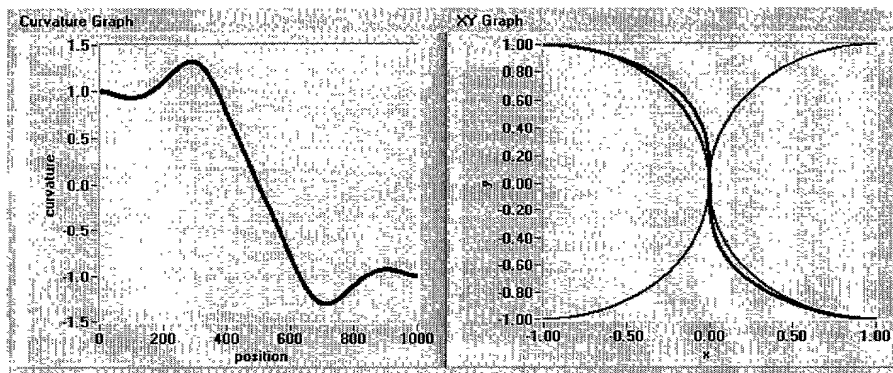
Case (B)

Figure 4C

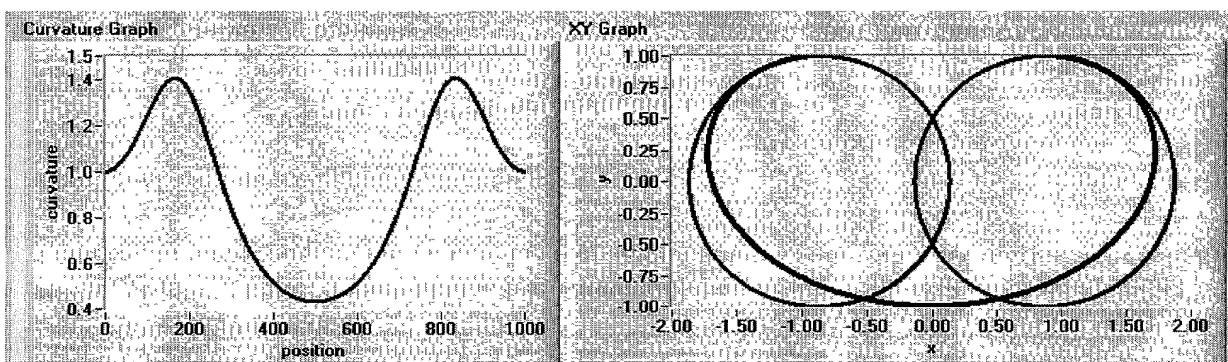




Smooth transition between two circles of different radii.  
Figure 4D

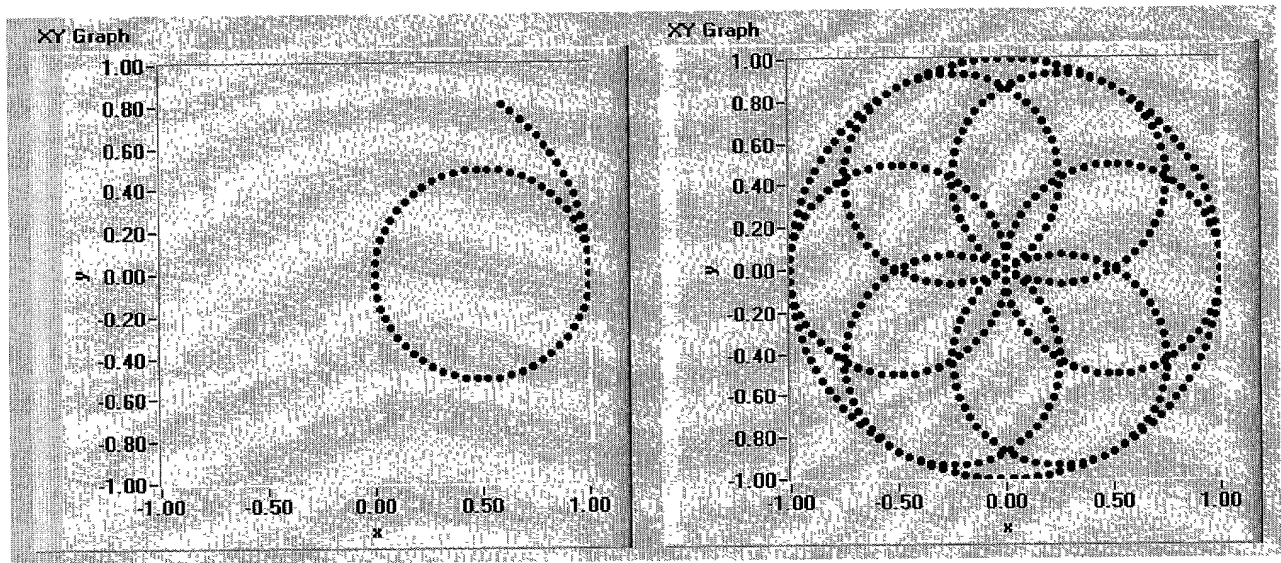


Smooth transition between two circles of same radius.  
Figure 4E



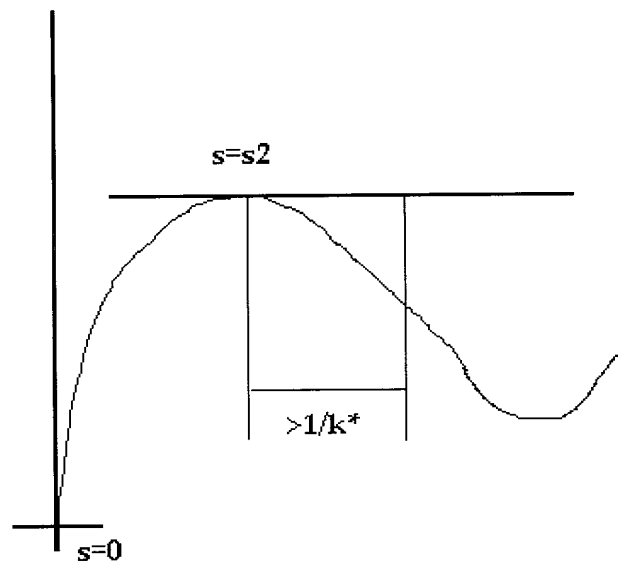
Transition between two unit circles of radius 1. The distance between the circles is  $\sqrt{3}$

Figure 4F



Beginning (left) and completion (right) of a scanning scheme where the curvature is below a certain value

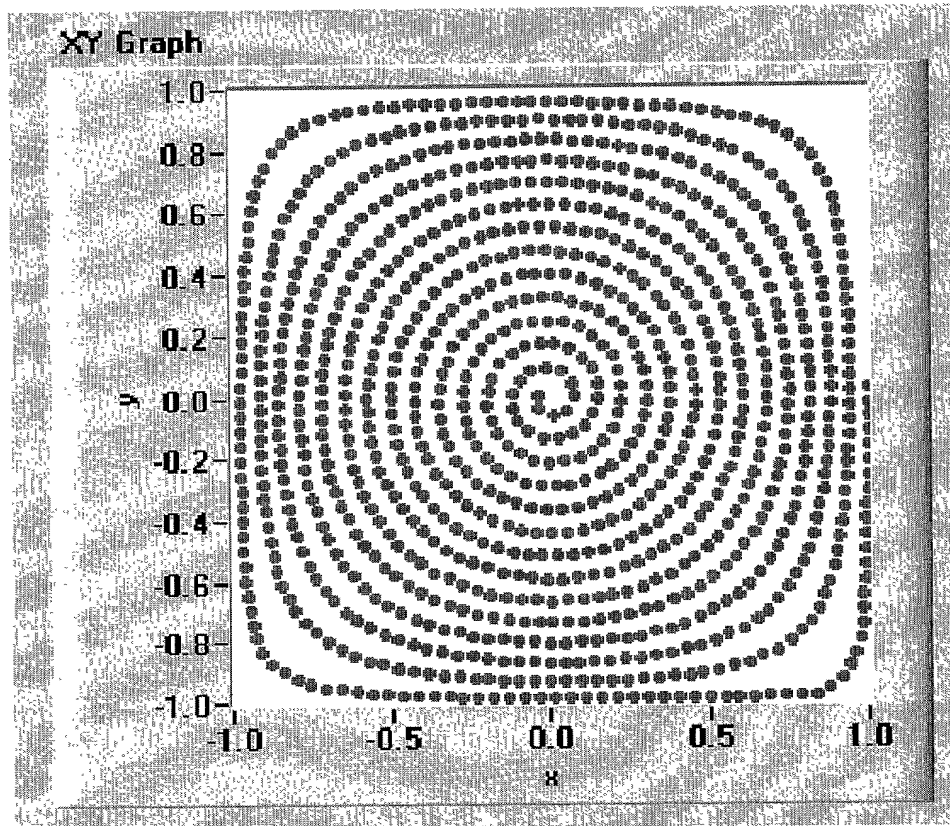
Figure 5A



Construction of  $s_2$  and the subsequent part of the curve

Figure 5B

09877314.060801  
T08090" HTE/2860



Conformal Spiral.

Figure 6

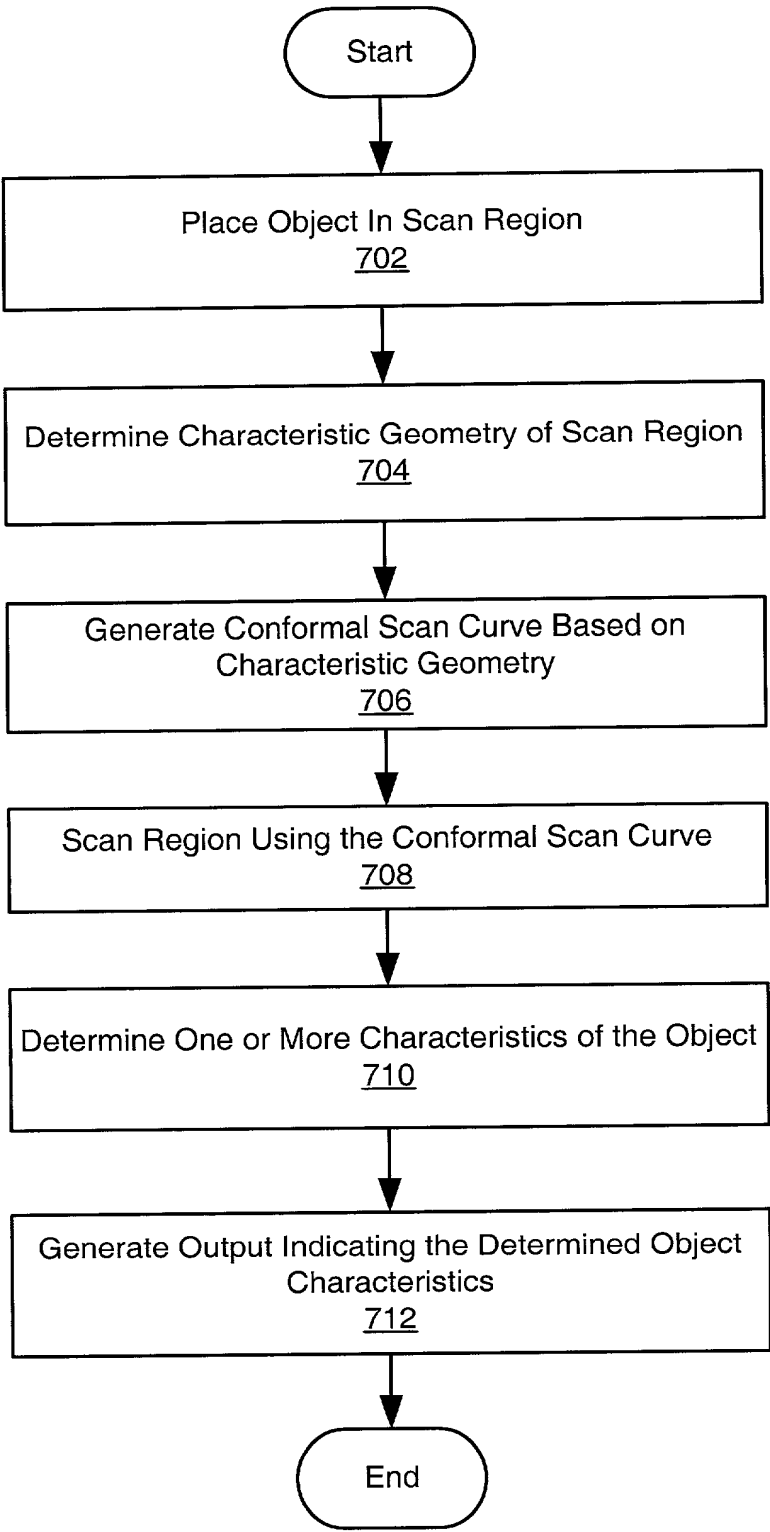
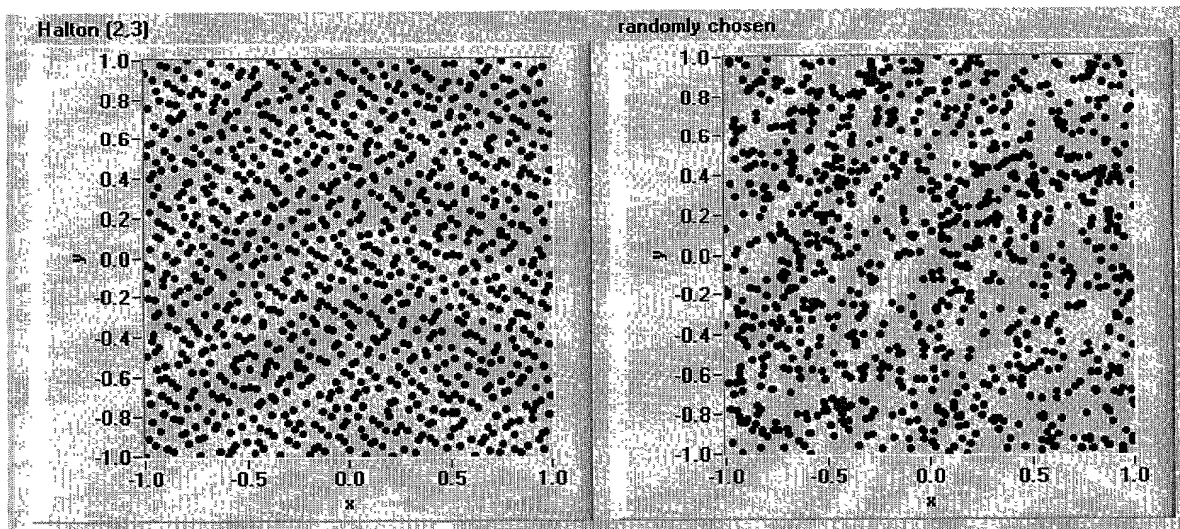
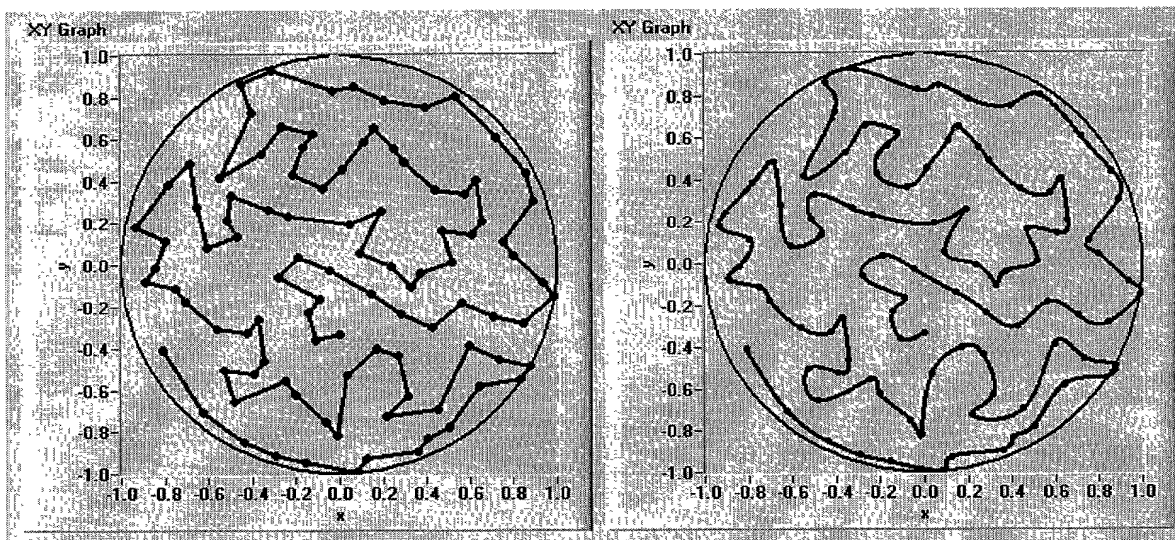
[illegible]

Figure 07



The first 1000 Halton points (left) and randomly chosen points (right)

Figure 8A



Original solution (left) and splined version (right).

Figure 8B

09877314.060801

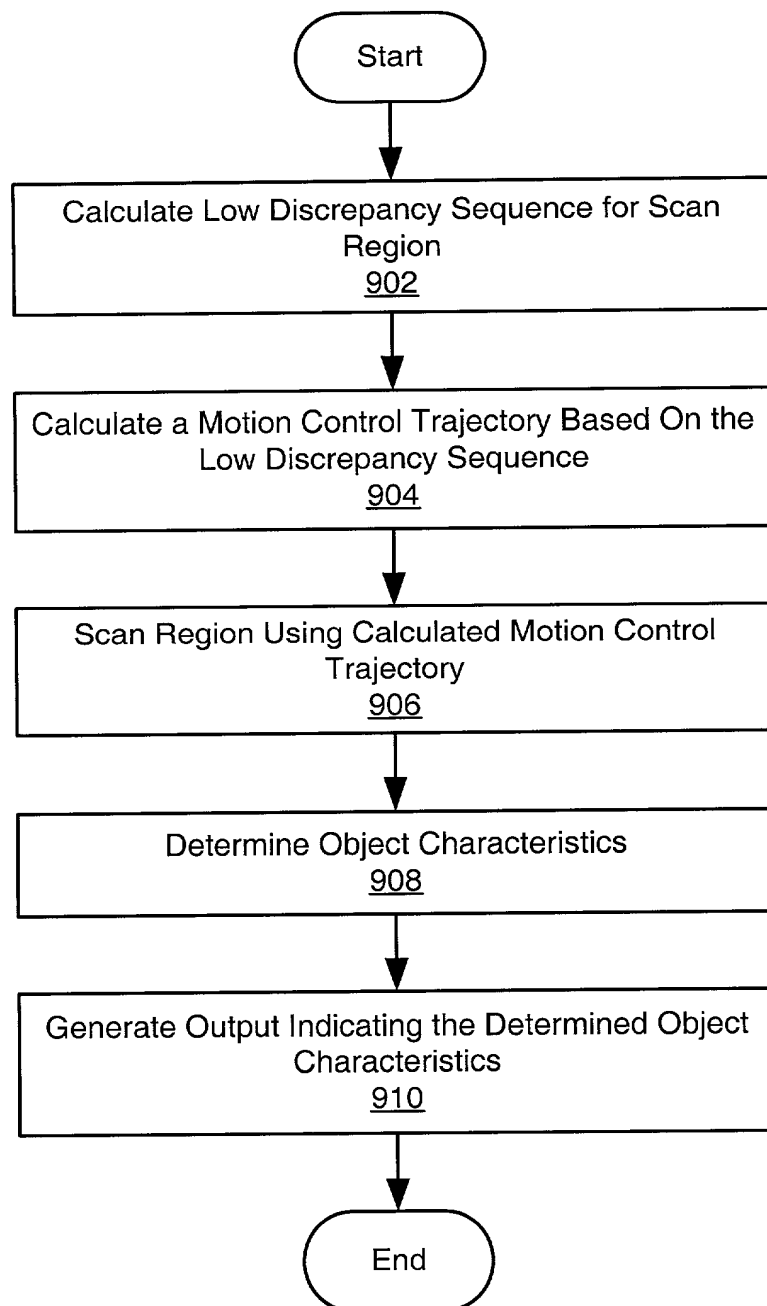
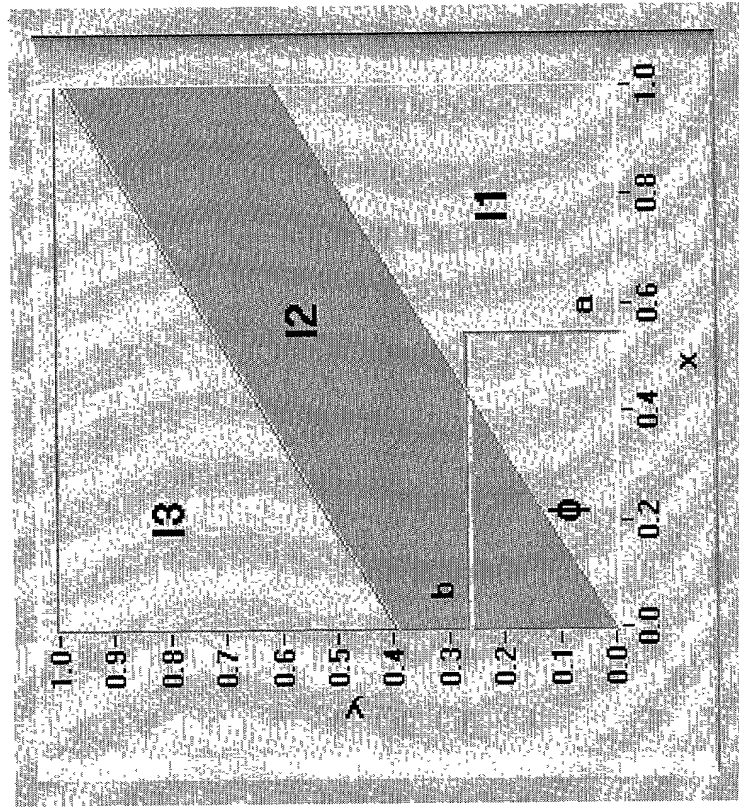


Figure 9



Definition of  $I_1$ ,  $I_2$ , and  $I_3$

Figure 10



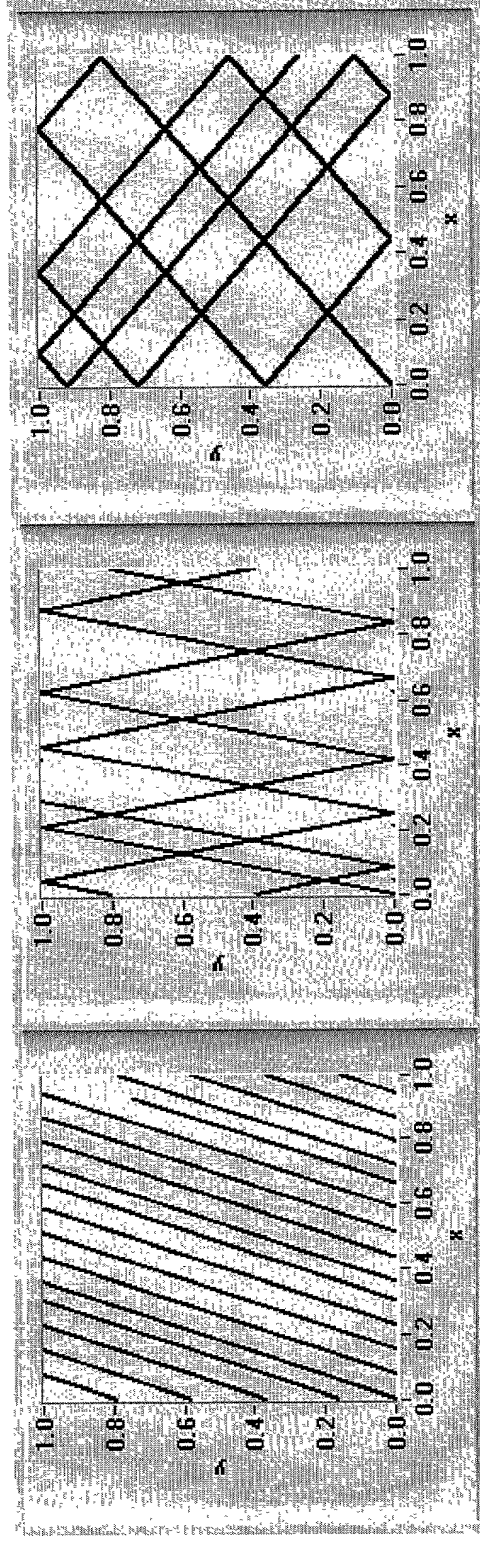


Figure 11A

Figure 11B

Figure 11C



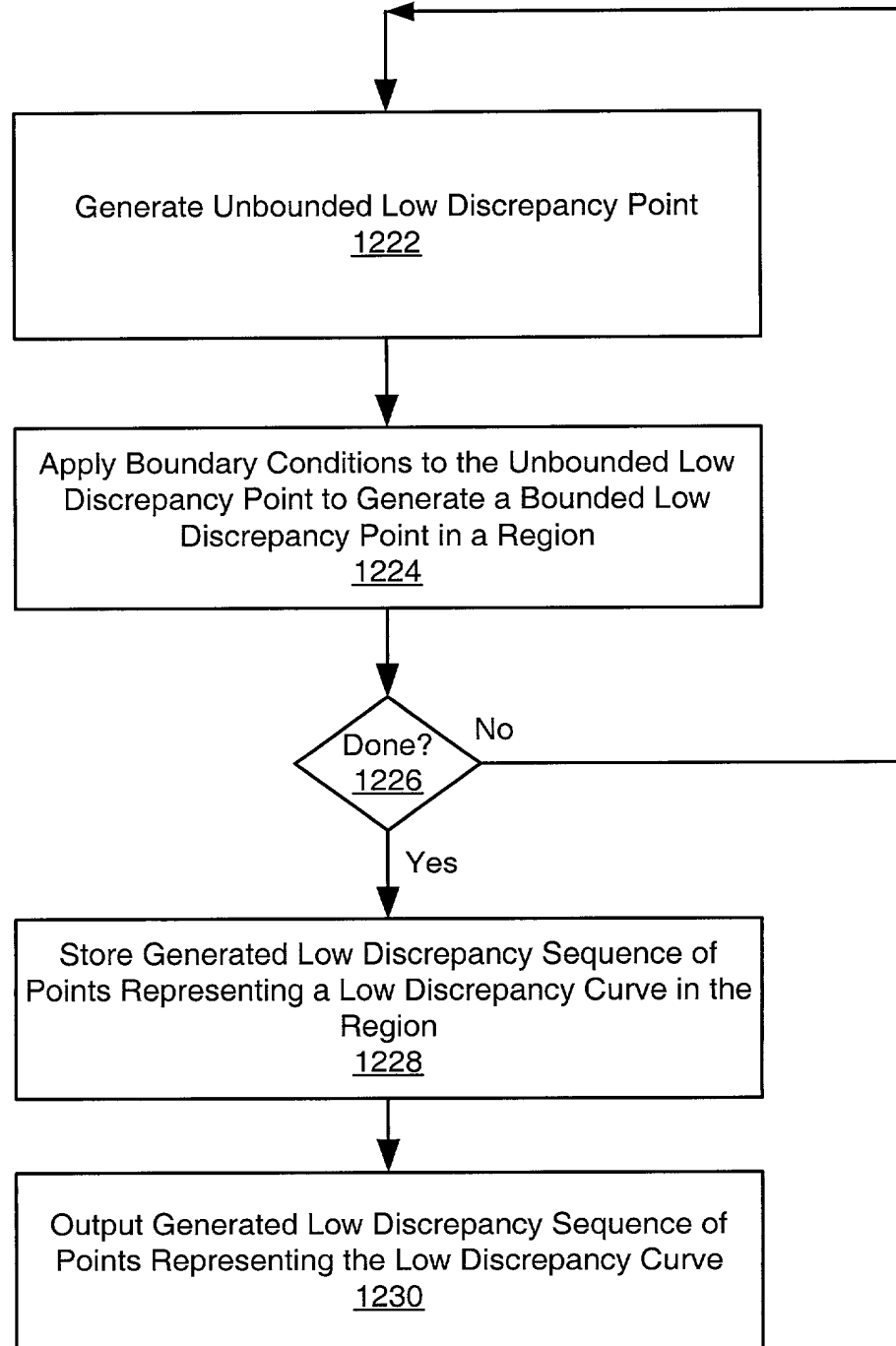


Figure 12A

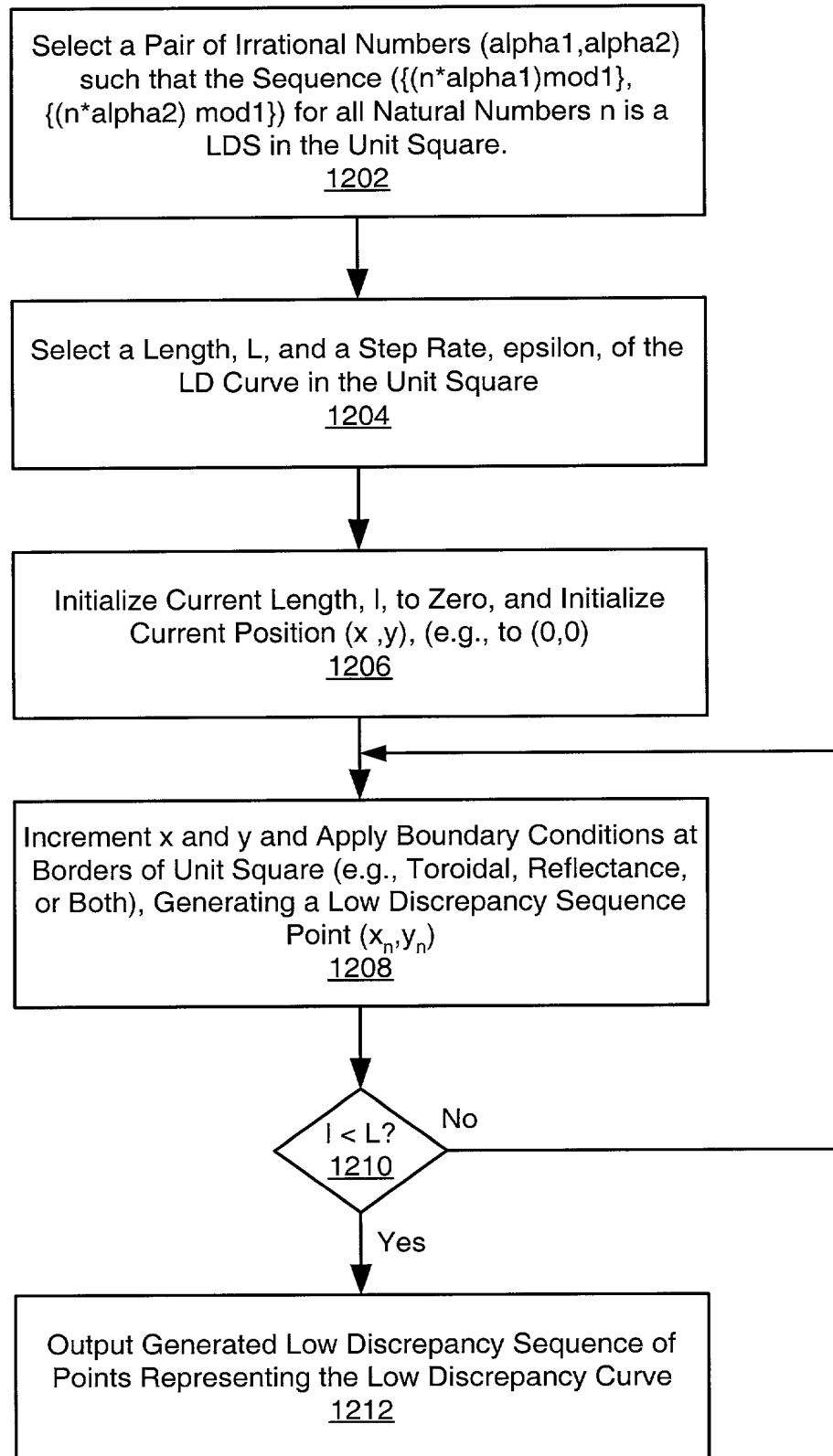
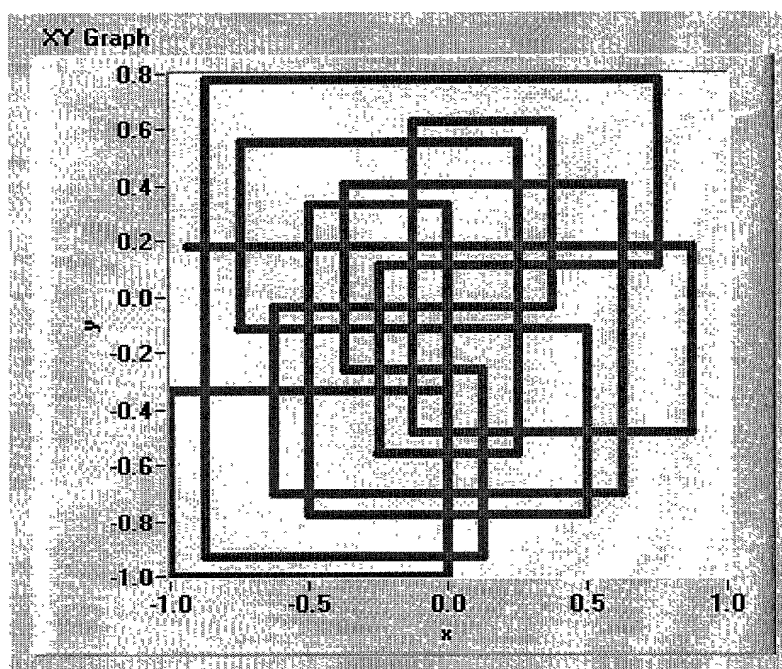
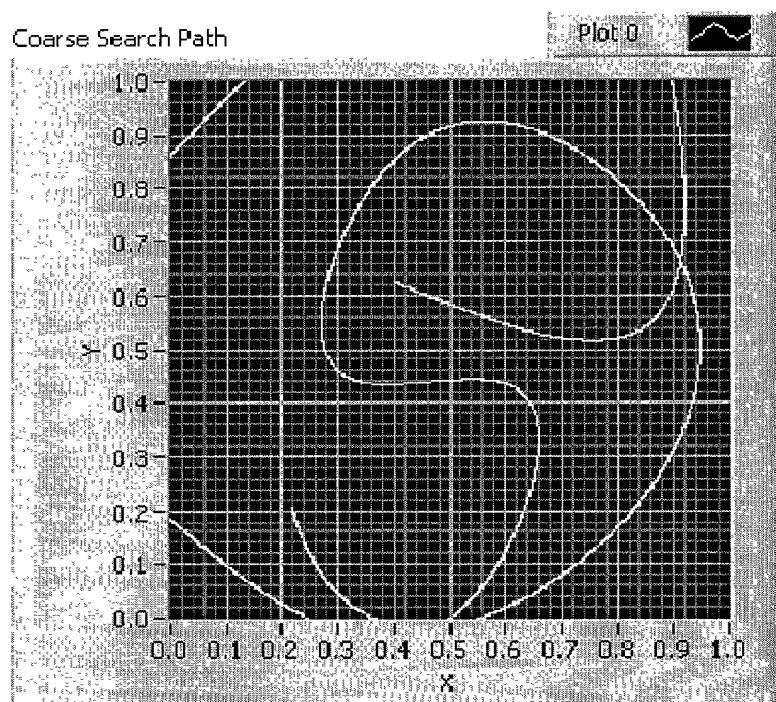


Figure 12B



Beginning of a Low Discrepancy Curve based on a specific Halton Sequence in 2d

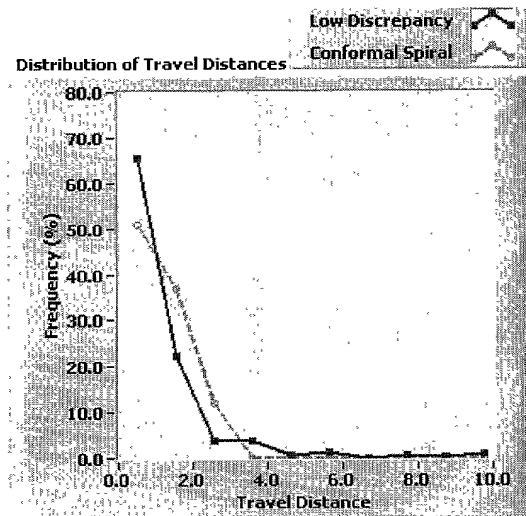
Figure 13A



Splined Low Discrepancy Curve coarse search

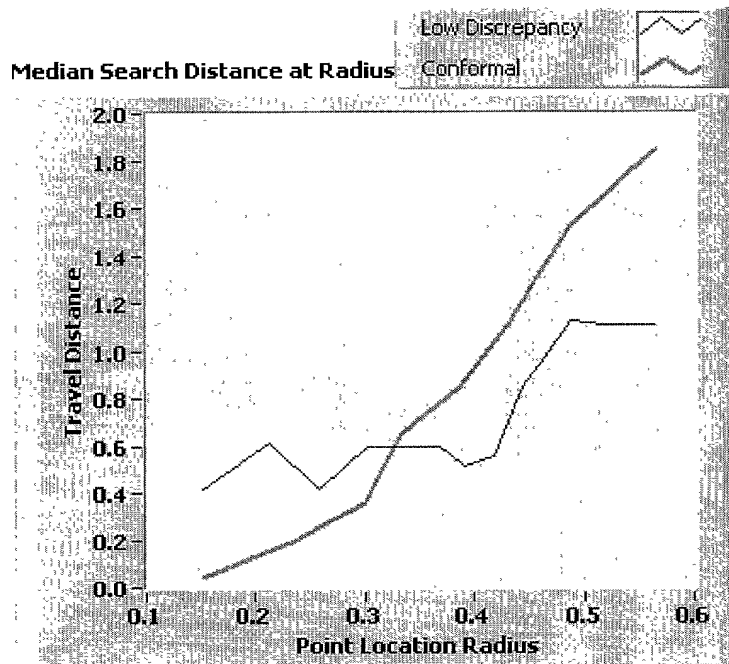
Figure 13B

09877314-060801



Comparison of Conformal Spiral and Low Discrepancy Searching

Figure 13C



Comparison of Travel Distance for Low Discrepancy Search and Conformal Spiral Search

Figure 13D

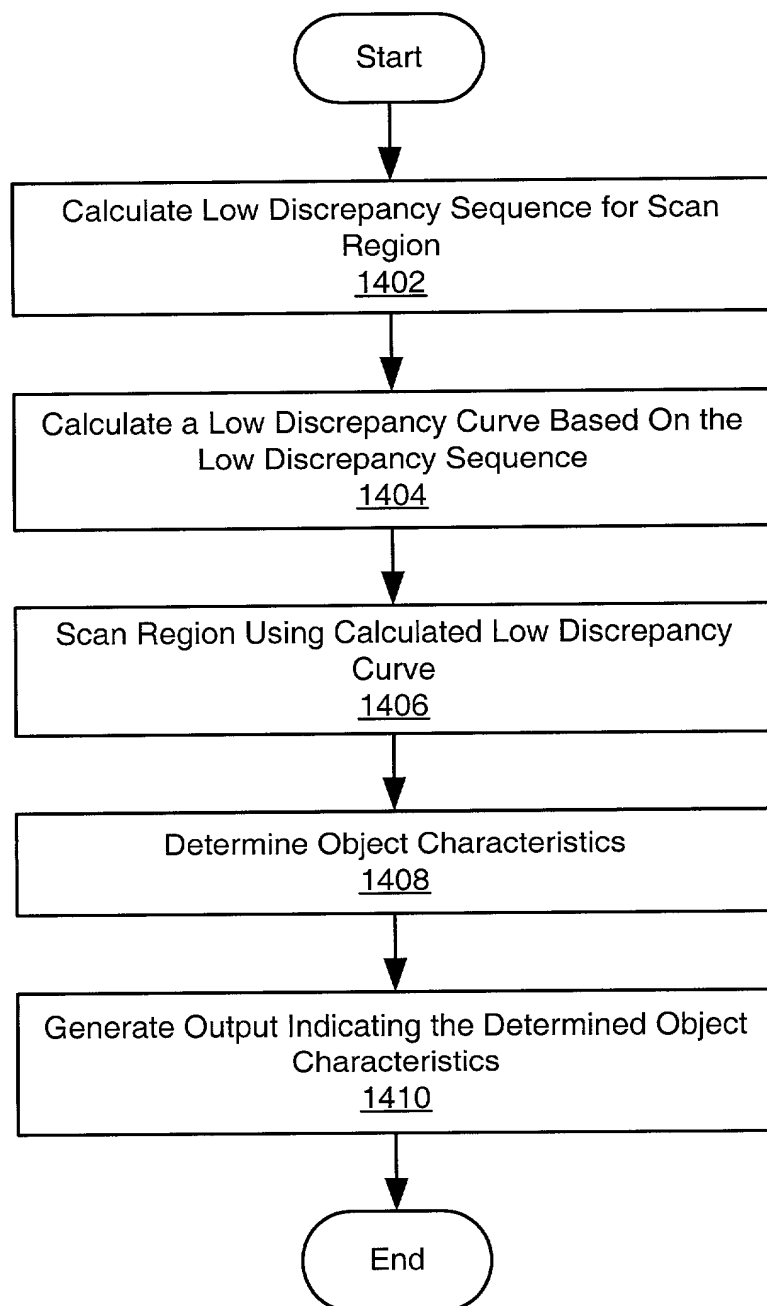
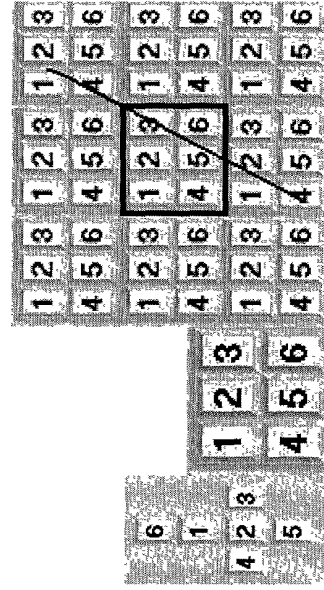
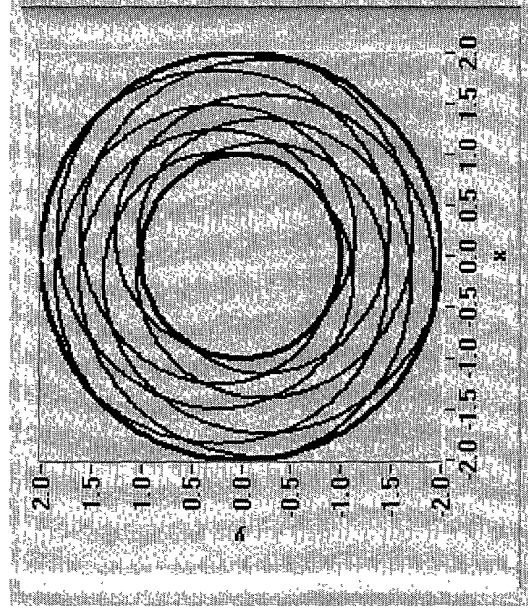


Figure 14



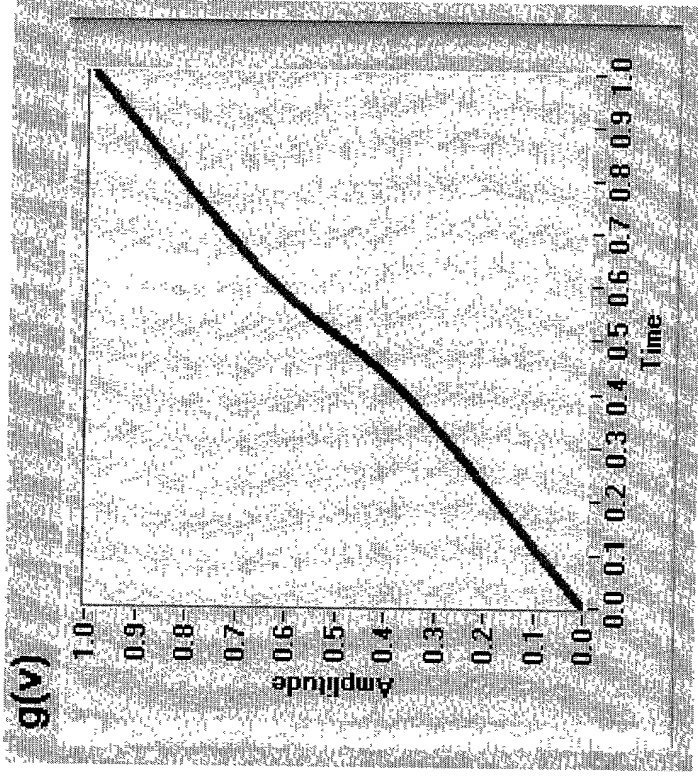
Tiling of the plane and relation to the surface of the unit cube

Figure 15A



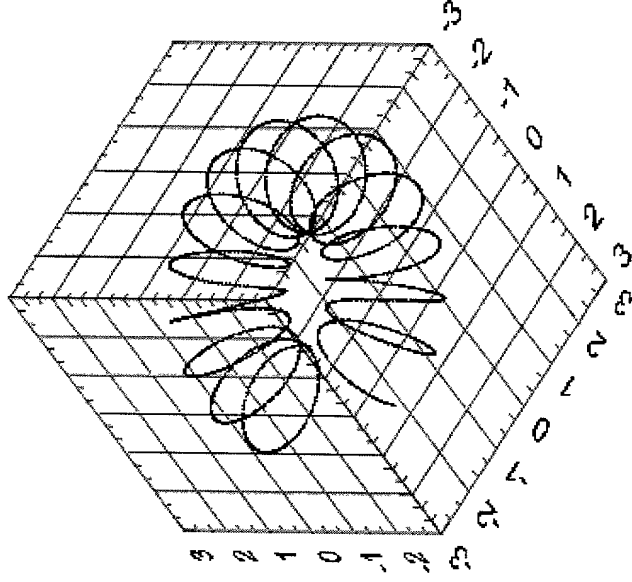
Low-discrepancy curve in a ring

Figure 15B



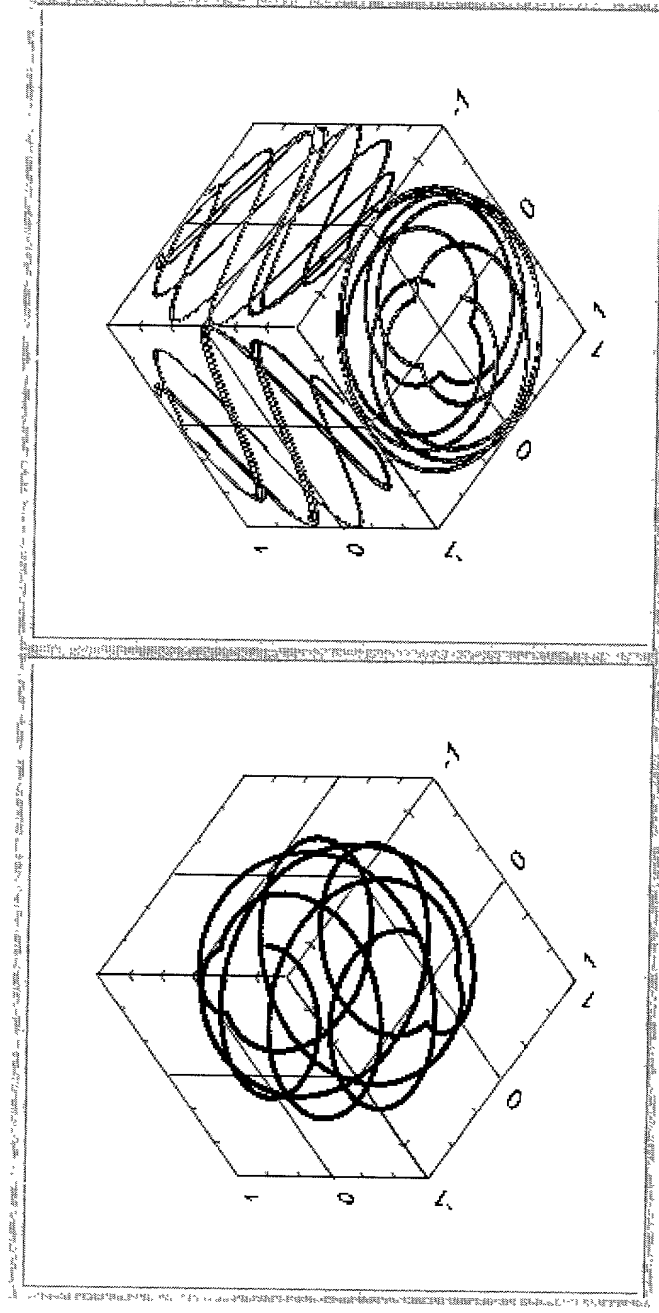
Low Discrepancy Preserving Mapping Function

Figure 15C



Low-discrepancy curve filling the surface of a torus

Figure 15D



Low-discrepancy curve on a sphere  
(left) and projections (right)

Figure 16



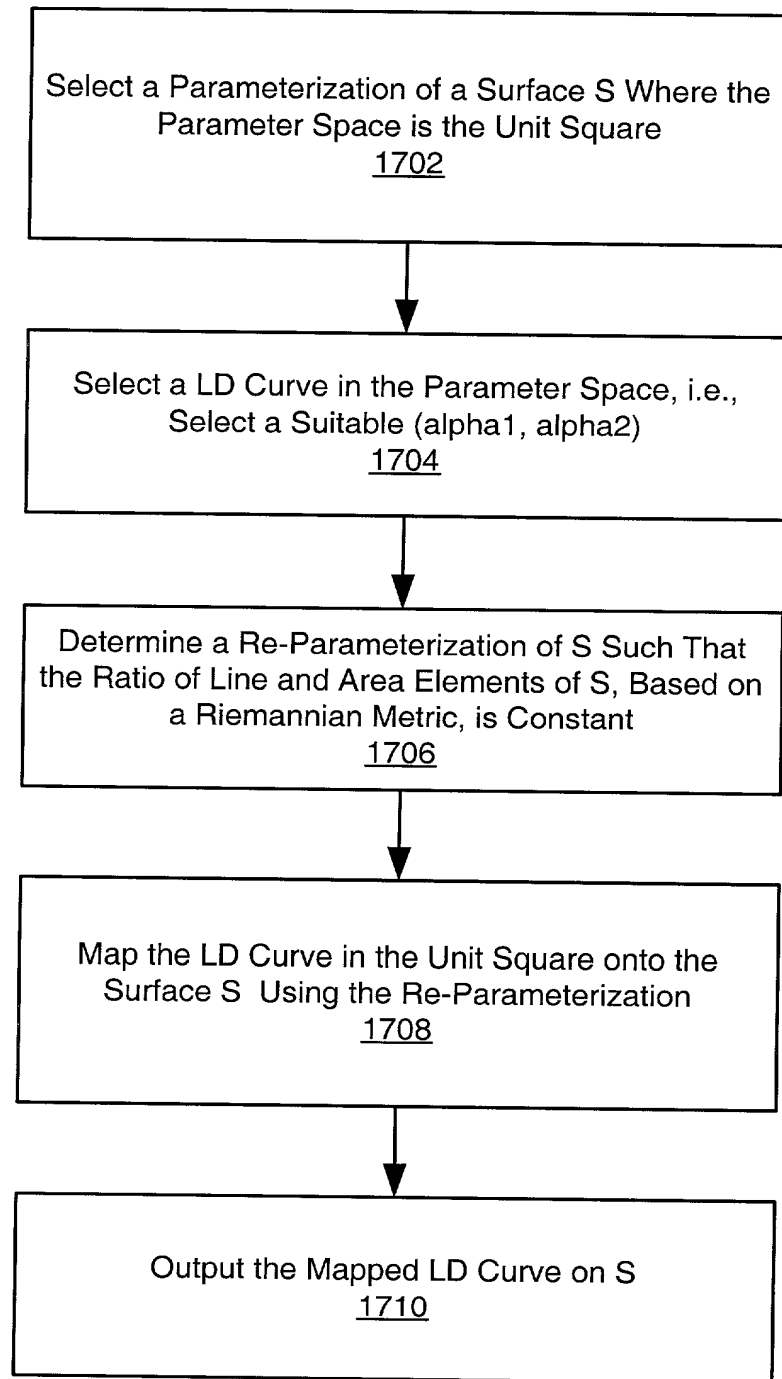
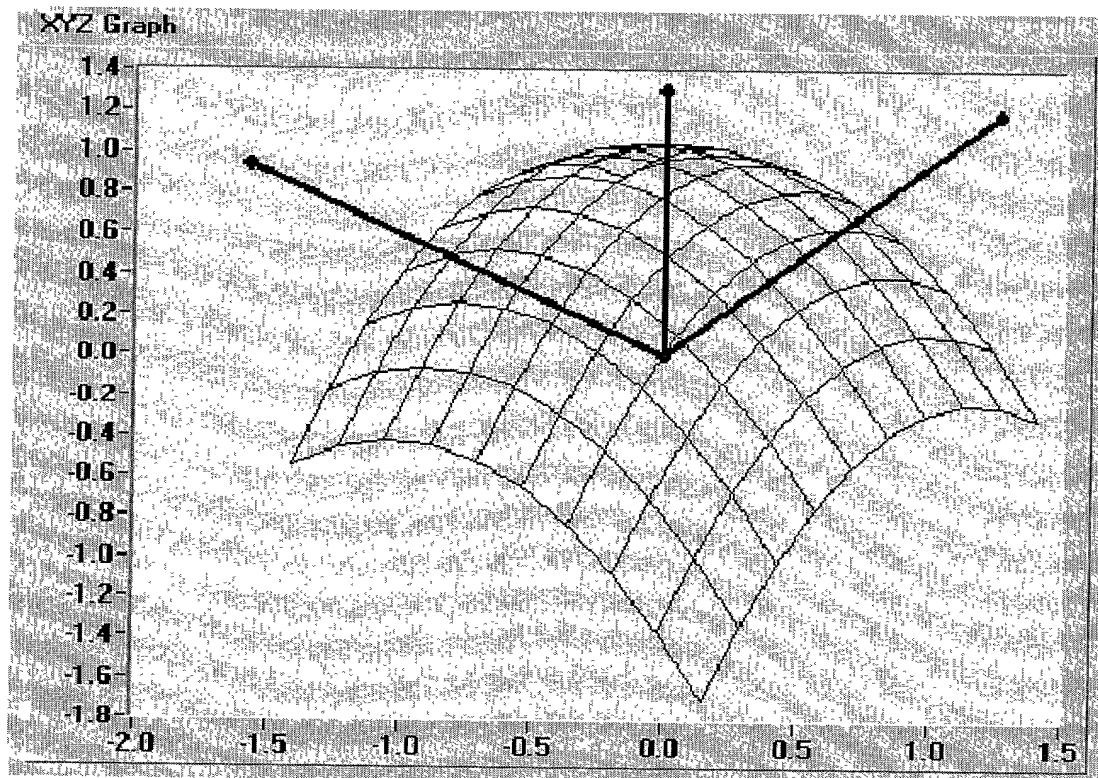
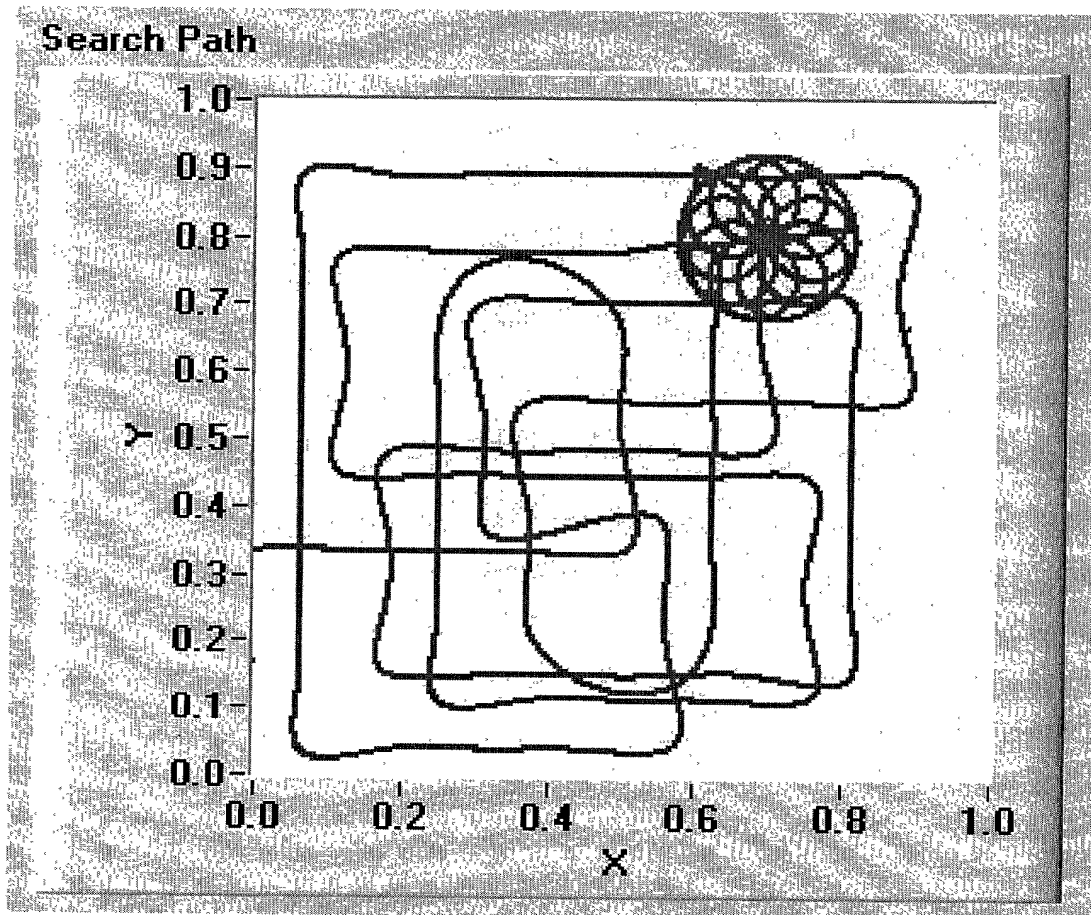


Figure 17



Surfaces can be scanned efficiently when the term low discrepancy sequence/ curve can be generalized, e.g. based on metrics on the surface.

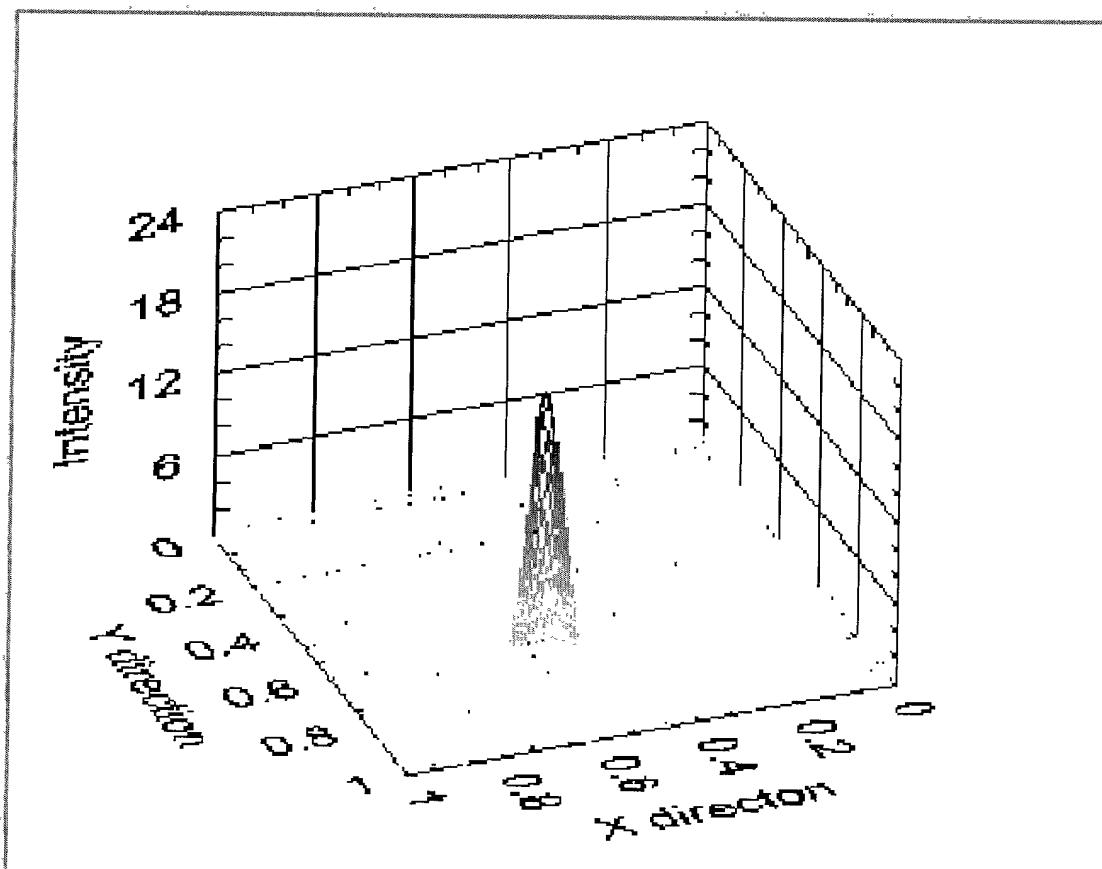
Figure 18



Splined Low Discrepancy Curve coarse search with refined final approach

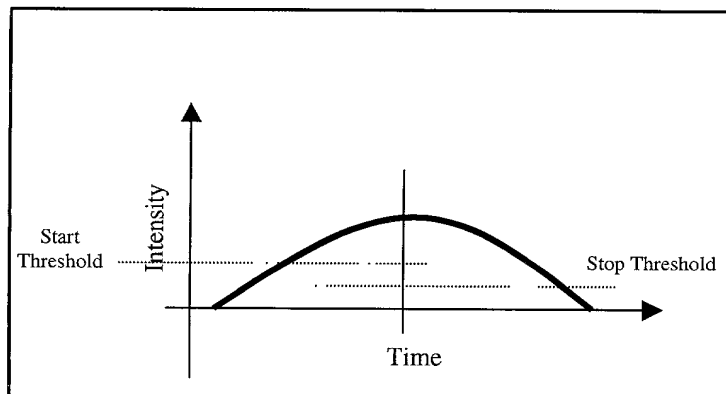
Figure 19

# Intensity Field Distribution in Search Area

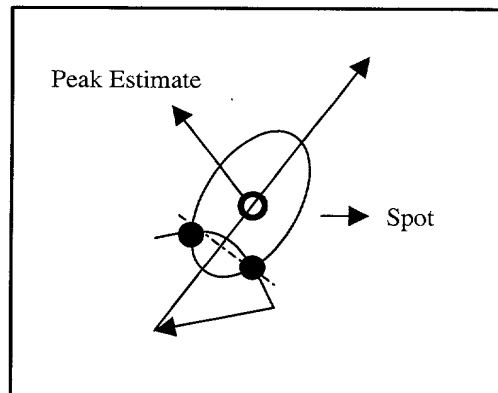


Beam intensity distribution in search area

Figure 20



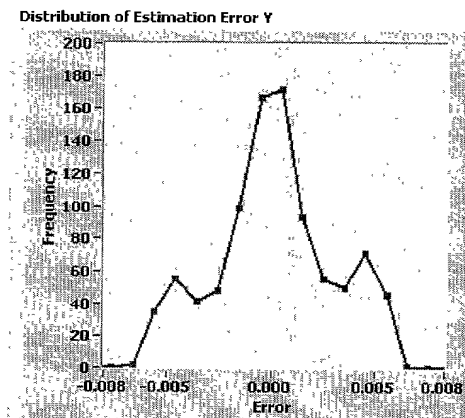
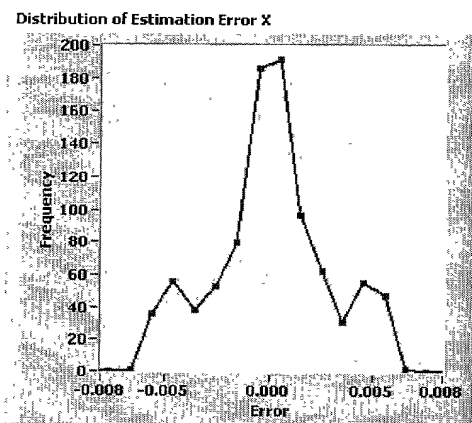
Location of the Peak



Initial Final Approach Move

Figure 21A

Figure 21B



Error distribution of the estimated peak X coordinate error (left) and Y coordinate error (right)

Figure 21C

```
graph TD; Start([Start]) --> 2202[Determine Characteristics of Region of Interest in the Region 2202]; 2202 --> 2204[Calculate a Continuous Scan Trajectory Based On the Determined Characteristics of the Region of Interest 2204]; 2204 --> 2206[Measure Region Along Continuous Scan Trajectory to Generate a Sample Data Set 2206]; 2206 --> 2208[Fit the Sample Data Set With a Parameterized Surface Using A Model of the Region 2208]; 2208 --> 2210[Calculate Location of Point of Interest Based on Parameterized Surface 2210]; 2210 --> 2212[Measure the Region at the Point of Interest to Confirm the Calculated Location 2212]; 2212 --> 2214[Generate Output Indicating the Determined Object Characteristics 2214]; 2214 --> End([End]);
```

The flowchart illustrates a method for determining object characteristics, starting with a 'Start' terminal and ending with an 'End' terminal. The process consists of the following steps:

- Determine Characteristics of Region of Interest in the Region 2202**
- Calculate a Continuous Scan Trajectory Based On the Determined Characteristics of the Region of Interest 2204**
- Measure Region Along Continuous Scan Trajectory to Generate a Sample Data Set 2206**
- Fit the Sample Data Set With a Parameterized Surface Using A Model of the Region 2208**
- Calculate Location of Point of Interest Based on Parameterized Surface 2210**
- Measure the Region at the Point of Interest to Confirm the Calculated Location 2212**
- Generate Output Indicating the Determined Object Characteristics 2214**

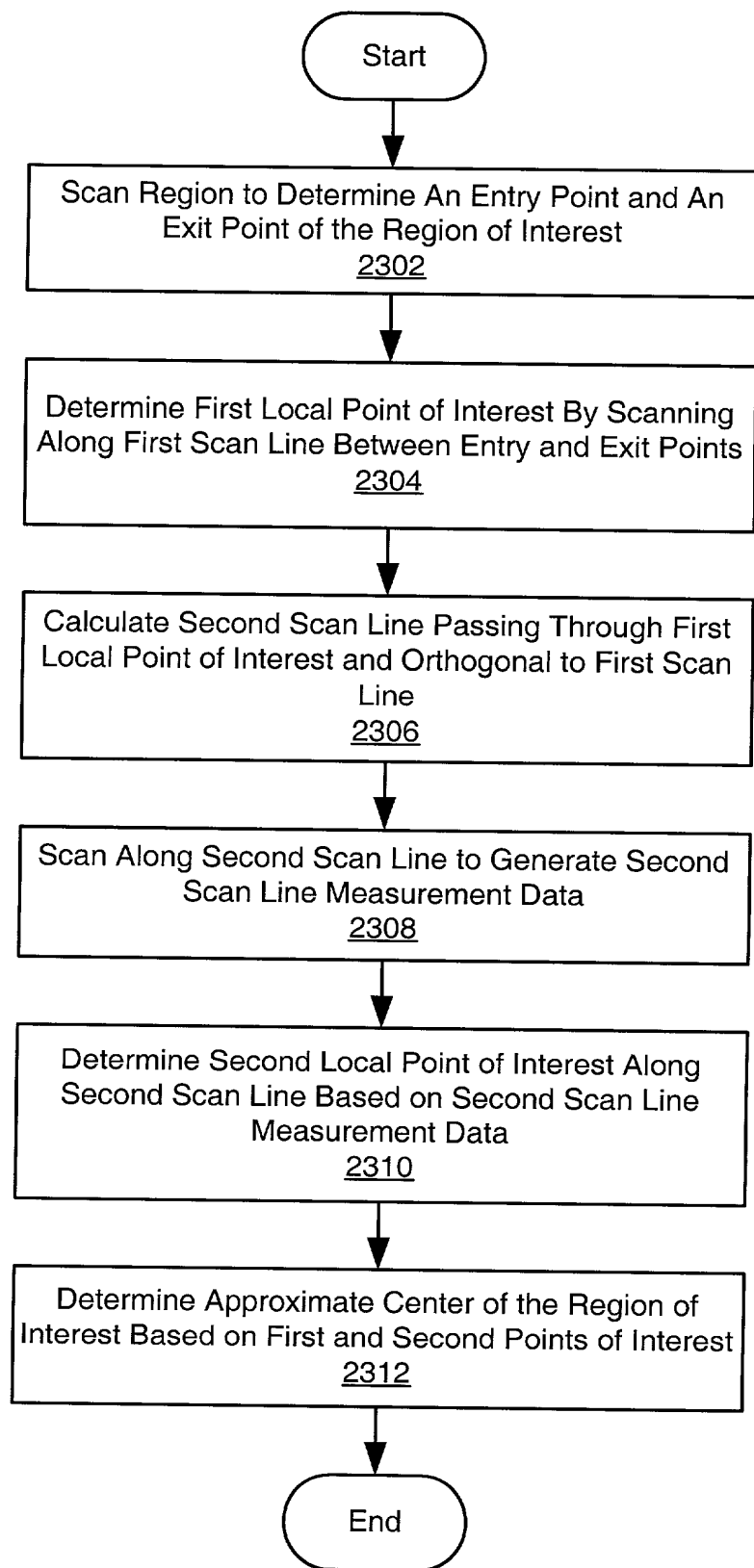


Figure 23